Foster Branch Watershed Survey
Sediment Source Evaluation

Harford County Department of Public Works
Water Resources Engineering

May 1997

Executive Summary

The tidal portion of Foster Branch has experienced sedimentation resulting in the need to periodically dredge the waterway. A field survey was performed to determine the sources of sediment. Recommendations were developed to address sediment transport to the estuary.

- Design and construct new projects identified as Priority 1-3 ($557K-$1036K)

  1. Retrofit Woodbridge SWM facility to control the 1 year storm ($75K-$100K) and restore receiving stream ($103K-$225K).
  2. Construct a new facility on Route 40 ($75K-$85K) and restore receiving stream ($168K-$360K).
  3. Retrofit Joppa Woods SWM facility to control the 1 year storm ($35K-$50K) and restore receiving stream ($101K-$216K).

- Implement repairs to Haverhill and Stillmeadow tributaries ($34K-$72K)

- Use chemical deicing only (cost to be determined).

Implementation of all recommendations will reduce sediment transport to the estuary , but will not eliminate it. Periodic dredging will continue to be necessary to maintain boating access.

None of the projects are currently budgeted. Stream restoration projects would be eligible for State funding at a 50/50 split and the Route 40 stormwater facility would be eligible for a grant with the State providing 75% and the County providing 25%. The County would have to apply to the State to obtain these grants.

Purpose

The tidal portion of Foster Branch has been, historically, a navigable waterway. Over the years, the navigable portion of the waterway has been subject to sedimentation resulting in the need to periodically dredge to maintain sufficient water depth for boat access. As the cost of dredging and spoil disposal continue to climb, and as State funding becomes more scarce, and as regulatory agencies are reluctant to continually permit dredging, the County must investigate ways to reduce the sediment load to the estuary. The County Executive has requested a watershed evaluation to identify sources of sediment to the tidal portion of the waterway and to provide a list of potential solutions to reduce sediment transport to the estuary. The Department of Public Works Engineering Division was given the responsibility of performing this task.

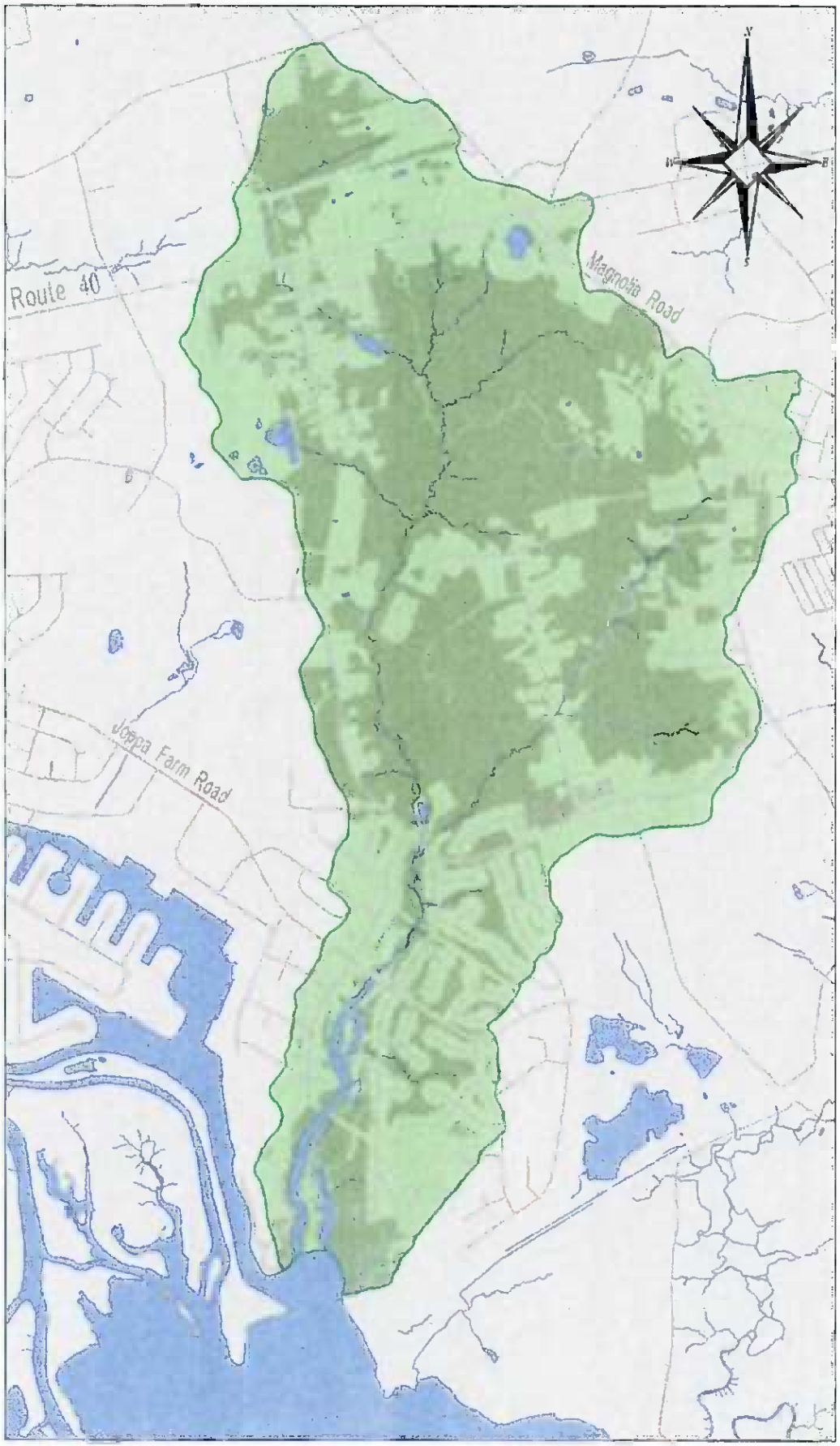
Background

The Foster Branch watershed is located in Joppatowne, Maryland. The drainage area is 1,446 acres with approximate 12 miles of streams. The watershed is roughly bordered by CSX Railroad to the north, Magnolia Road to the east, and Trimble Road to the west (Figure 1). Land use is a mix of residential, commercial, and forest with some agriculture. There is also a rubble fill and an inactive sand and gravel quarry in the northern portion of the watershed. With the exception of Woodbridge, most of the residential development occurred prior to stormwater management requirements. There are two active residential construction sites in the watershed, Magnolia Farms and Joppa Woods. There is also an active bridge replacement project at Joppa Farm Road.

The watershed is located in the Coastal Plain physiographic province. Coastal Plain soils are generally sandy, sandy loam and clayey. Visual inspection of the area indicates soils that are unconsolidated and highly erodible, as is characteristic of the Coastal Plain. Foster Branch is tidally influenced up to Joppa Farm Road, although, in extremely high tides, residents have indicated that the water will back up between Joppa Farm Road and Trimble Road. The tidal portion of Foster Branch was dredged in 1981 (7,000 cu yds) and in 1992 (3,000 cu yds).

Inspection/Enforcement Activities

Harford County Inspections is responsible for inspection and enforcement of sediment and erosion control activities in active construction. The inspector is currently working with the developers of both Magnolia Farms and Joppa Woods to assure the



Foster Branch Watershed Study

Scale 1 inch = 2000 Feet

Figure 1

projects remain in compliance with their sediment and erosion control permit. Pappy's Inc. is a rubble fill operation in the northern portion of the watershed at the end of Oak Avenue. It has an NPDES industrial discharge permit, issued and enforced by Maryland Department of the Environment (MDE). The permit limits the discharge of total suspended solids to 30 mg/l average and 60 mg/l maximum, with an average discharge of 14,000 gallons per day. The have been no enforcement actions by MDE in the last three years. The County Sediment Control Inspector and two staff members from Water Resources Engineering visited the site unannounced on May 2, 1997. The property showed adequate sediment and erosion control practices. There was no evidence of sediment deposition in the receiving stream. There is no overland runoff from the site. There is a clay mine located at the end of Sand Hill Road. According to MDE, the mine is active only sporadically.

Current Projects

Stabilization measures have been employed in two drainageways (Stillmeadow and Haverhill) in the Foster Knoll area. Both areas are currently in need of maintenance and repair. Harford County Department of Public Works is preparing cost estimates for this work and has applied for State funding from Maryland Department of the Environment to help defray these costs. To date, MDE has not committed funding to the project.

A separate project is currently underway to stabilize the culverts under Trimble Road as well as several outfalls and erosion areas south of Trimble Road. Total cost for this project is $183K and is partially funded by a grant from MDE. Construction is expected to begin during the summer of 1997.

Since these problems are already being addressed, the areas were not included in the rankings.

Survey Methodology

The drainage area was digitized on GIS using topographic features. Any property that had a stream channel flowing through it was flagged and list of property owners was developed. Letters were mailed to all property owners to obtain permission to go on the property.

The drainage area was further divided into 21 grid maps. The maps were printed and laminated and carried in the field. Any property whose owner denied permission to enter was clearly marked on the map. Two teams of two people were assigned sections of the drainage area to survey.

Data was collected using similar methodology as that employed in the Bynum Run survey. Data sheets were used to collect information on erosion sites, channelization sites, inadequate stream buffers, fish barriers, trash dumping, unusual conditions, wetland or water quality creation sites, and instream construction activity. Data sheets are included in Appendix I. As a team encountered a problem, a data sheet was filled out, the site was marked on the grid map and a photograph was taken of the problem. Sites were numbered using the grid number, team number and site number. For example, site 14201 was located on grid 14, investigated by team 2, and was site 1.

Data Management and Analysis

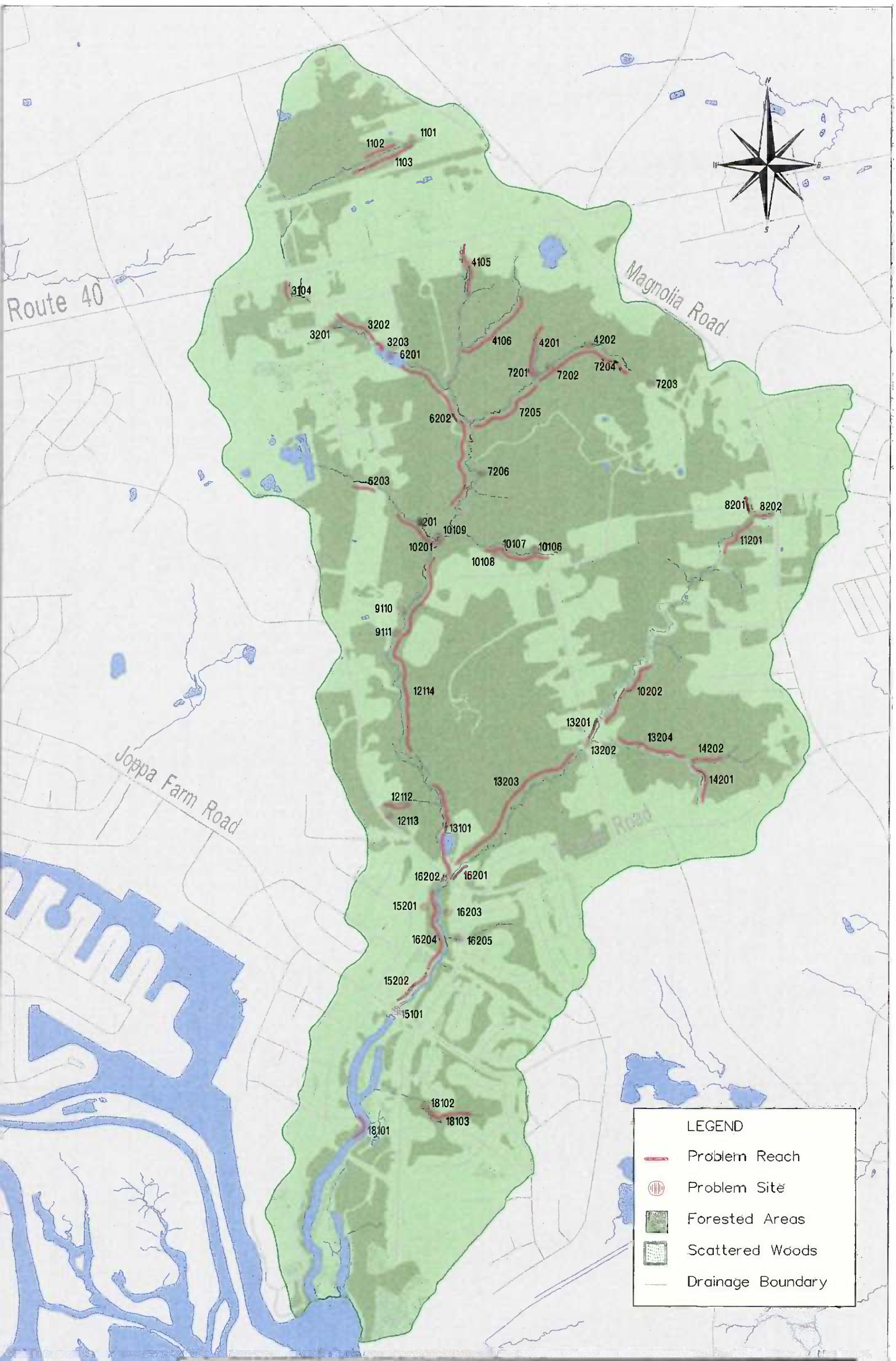
Data was organized and tabulated by problem type. Site locations were digitized on the GIS (Figure 2). Photographs were labeled with site number and problem type and placed in a binder, organized by grid map. Data was entered into Microsoft Access Database. Raw data is included in Appendix II.

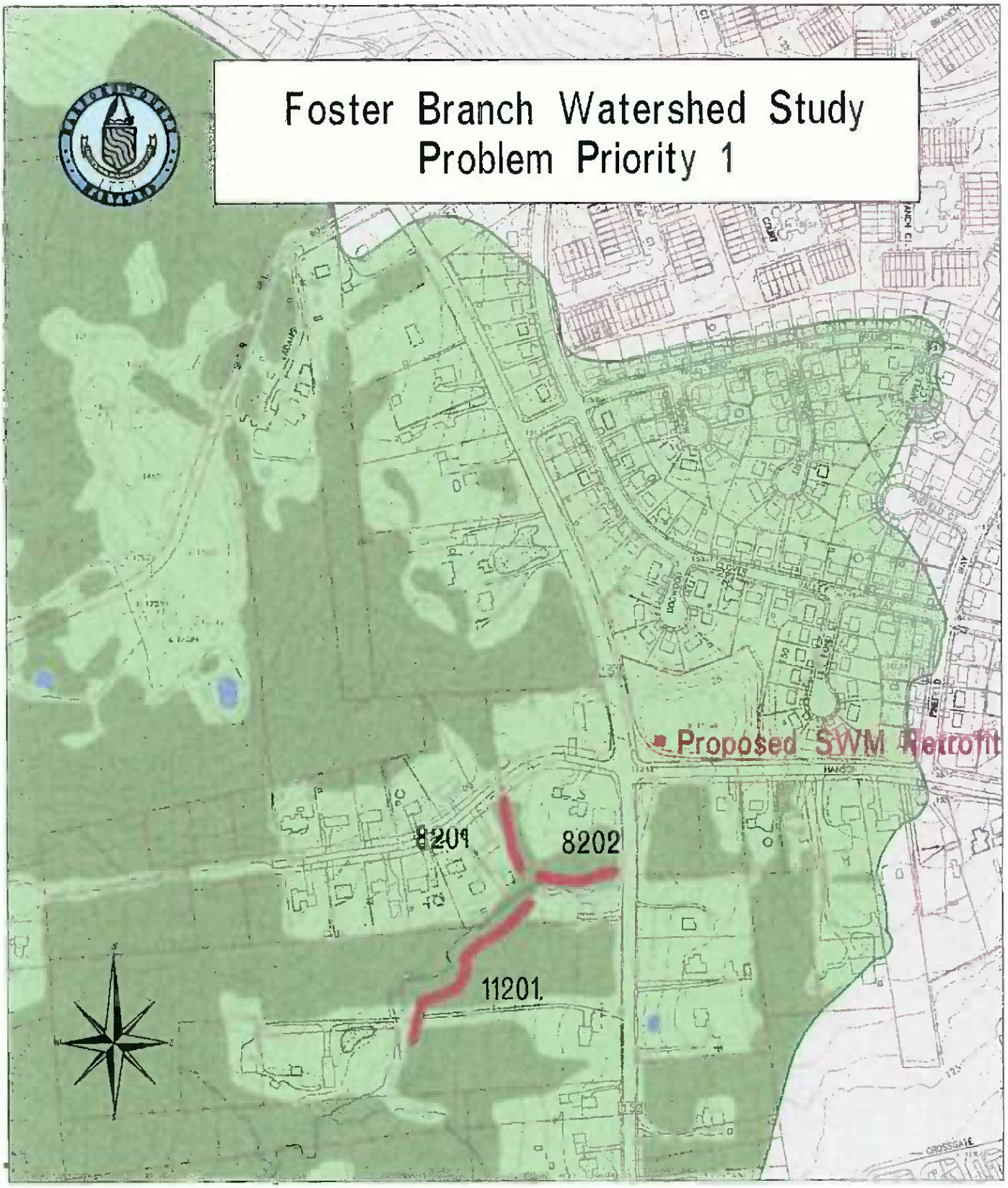
Since the purpose of the project was to identify sediment sources and to reduce sediment load, analysis focused on erosion problems. Erosion sites were sorted by severity, correctability and access and were reviewed by using the data, the photographs and the maps. Restoration opportunities were discussed for each site. The opportunity for water quantity and quality control was evaluated. Outfall protection, streambank stabilization and stream restoration were other alternatives that were evaluated, if appropriate, for each site. In several instances, quantity control must be addressed prior to streambank stabilization and restoration.

Cost Analysis

Costs for each alternative were estimated for design and construction. Costs were not estimated for land or easement acquisition. Since the majority of the sites are located on private property, land and easement acquisition costs would be negotiated on a case by case basis. Costs for stormwater management facilities were based on storage requirements as determined by drainage area served and size of storm managed. Utility relocation and other unique needs were not included in the costs. Stream restoration projects were assigned ranges based on average costs for similar projects in Baltimore County and Annapolis. Stream restoration costs in Annapolis are significantly higher ($300/lf) than those in Baltimore County ($140/lf), but Annapolis has similar Coastal Plain topography and soils.

Table 1 lists the alternatives that would address the worst erosion problems. Figures 3-8 show individual problem sites.


Route 40
Magnolia Road
Joppa Farm Road
N
E
S
1101
1102
1103
4105
3104
3202
3201
3203
6201
4106
4201
4202
7201
7202
7204
7203
6202
7205
7206
6203
8201
8202
201
10109
10201
10107
10106
10108
11201
9110
9111
12114
10202
13201
13204
13202
14202
14201
13203
12112
12113
13101
16202
16201
15201
16203
16204
16205
15202
15101
18102
18103
18101
LEGEND
Problem Reach
Problem Site
Forested Areas
Scattered Woods
Drainage Boundary



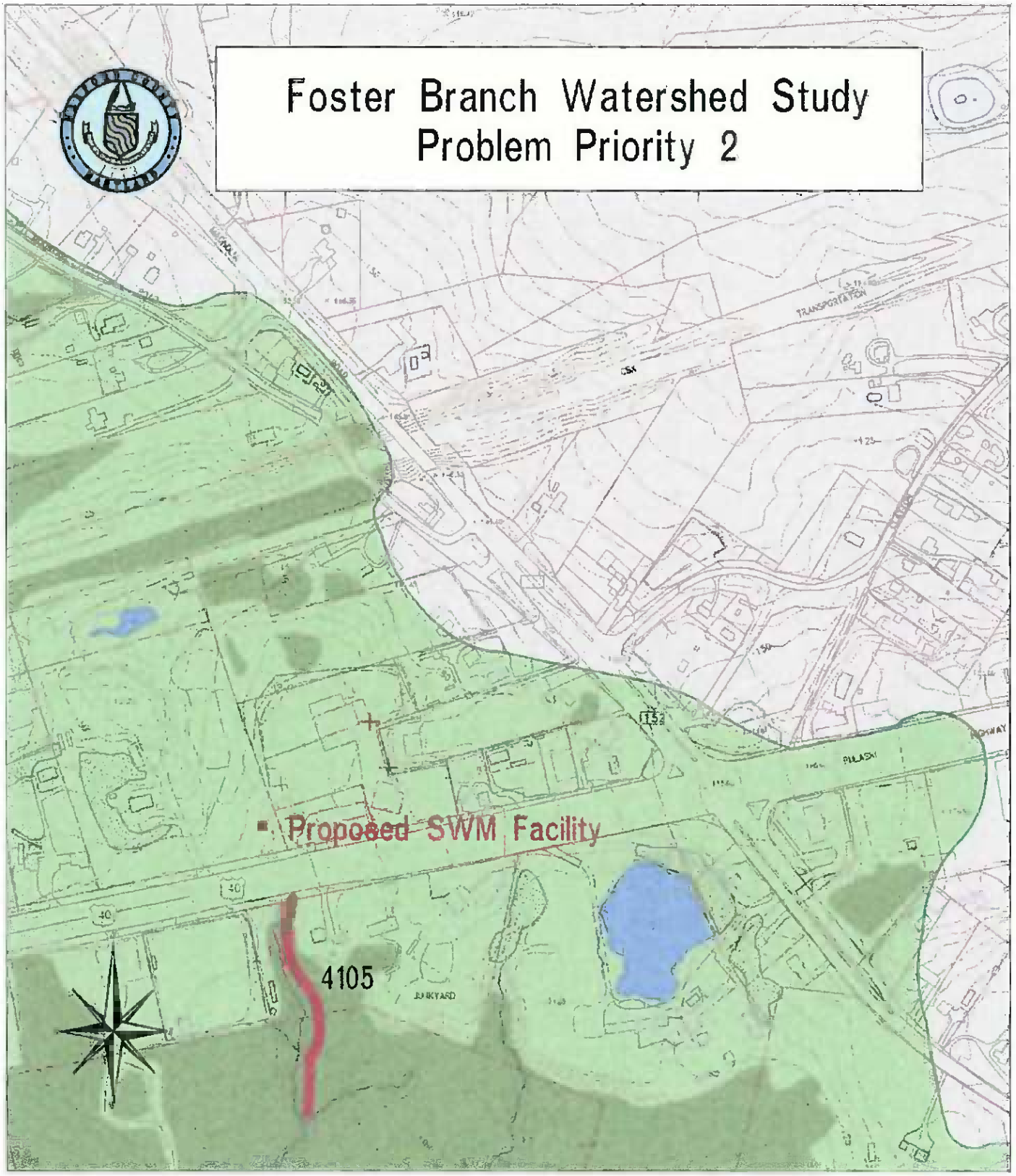
LEGEND

- Problem Reach
- Problem Site
- Forested Areas
- Scattered Woods
- Drainage Boundary
- Outfalls 36" and larger
- Outfalls less than 36"
- Inflow
- SWM Facility
- Stormdrain
- Manhole
- Inlet

Scale: 1" = 400 FT
Contour Interval 5 Feet

Data collected and complied by Water Resources Engineering April 1997.

Figure 3



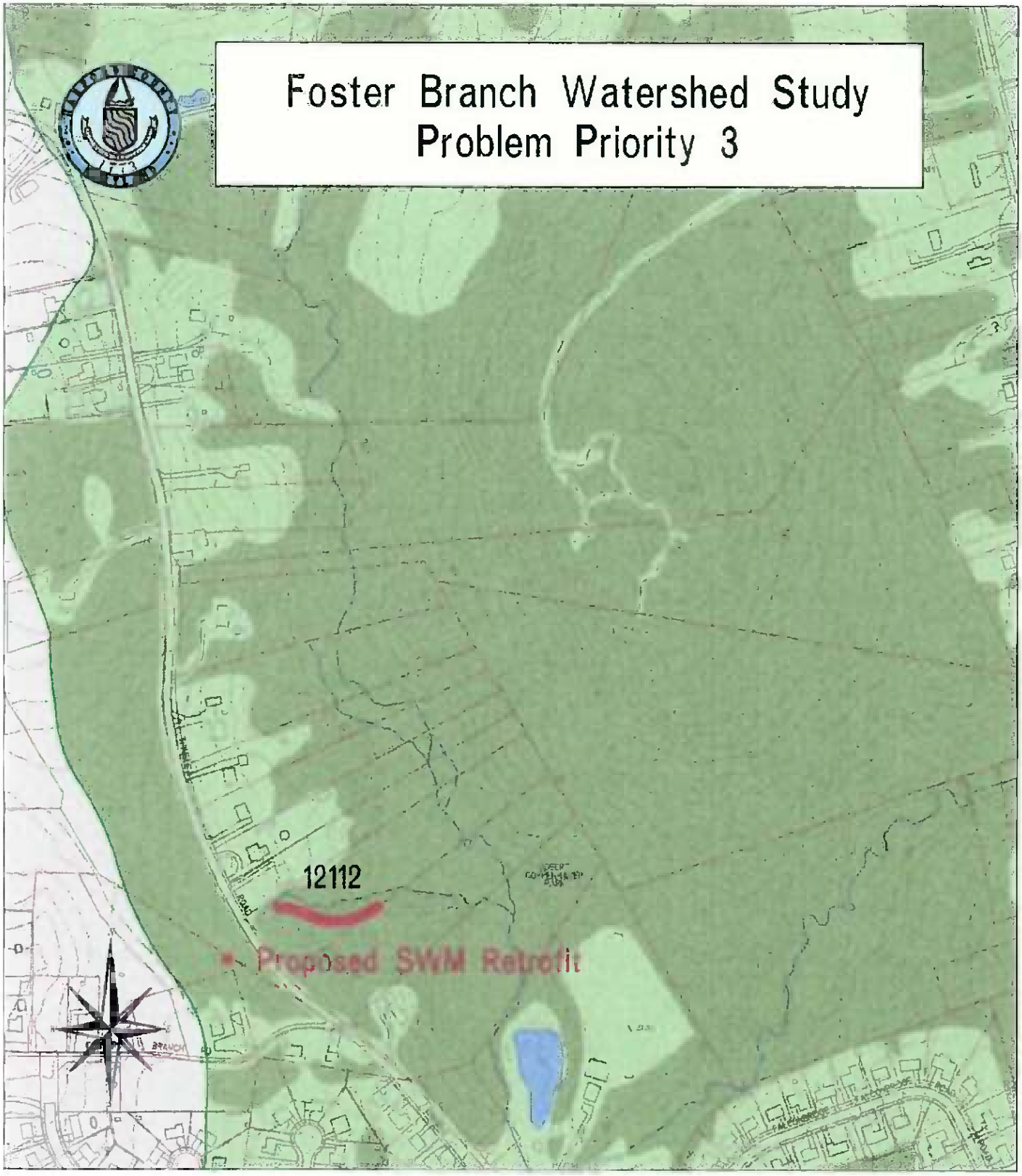
LEGEND

- Problem Reach
- Problem Site
- Forested Areas
- Scattered Woods
- Drainage Boundary
- Outfalls, 36" and larger
- Outfalls, less than 36"
- Inflow
- SWM Facility
- Stormdrain
- Manhole
- Inlet

Scale: 1" = 400 FT
Contour Interval 5 Feet

Data collected and complied by Water Resources Engineering April 1997.

Figure 4



LEGEND

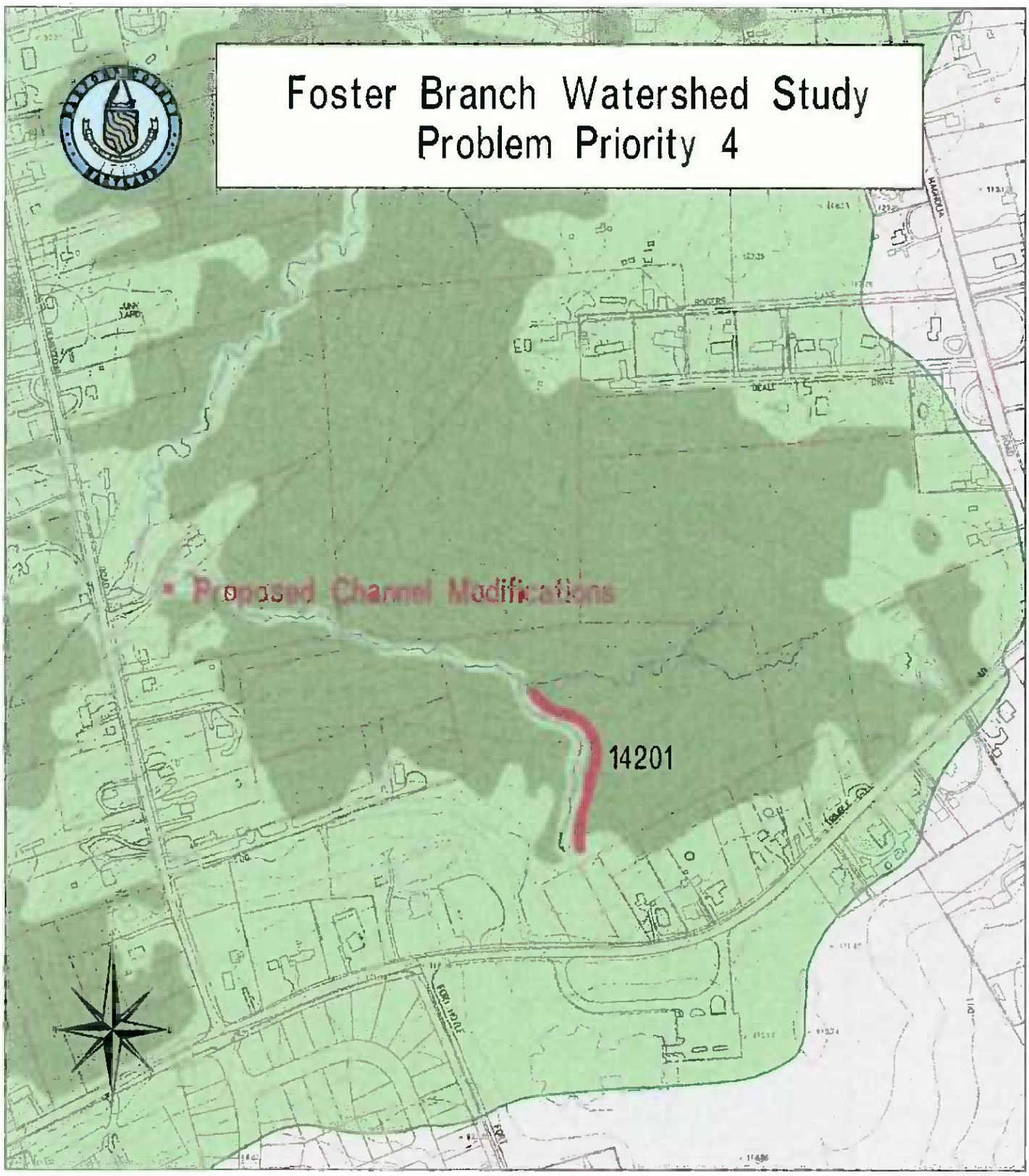
- Problem Reach
- Problem Site
- Forested Areas
- Scattered Woods
- Drainage Boundary
- Outfalls 36" and larger
- Outfalls less than 36"
- Inflow
- SWM Facility
- Stormdrain
- Manhole
- Inlet

Scale: 1" = 400 FT
Contour Interval 5 Feet

Data collected and complied by Water Resources Engineering April 1997.

Figure 5

Foster Branch Watershed Study
Problem Priority 4



LEGEND

- Problem Reach
- Problem Site
- Forested Areas
- Scattered Woods
- Drainage Boundary
- Outfalls 36" and larger
- Outfalls less than 36"
- Inflow
- SWM Facility
- Stormdrain
- Manhole
- Inlet

Scale: 1" = 400 FT
Contour Interval 5 Feet

Data collected and complied by Water Resources Engineering April 1997.

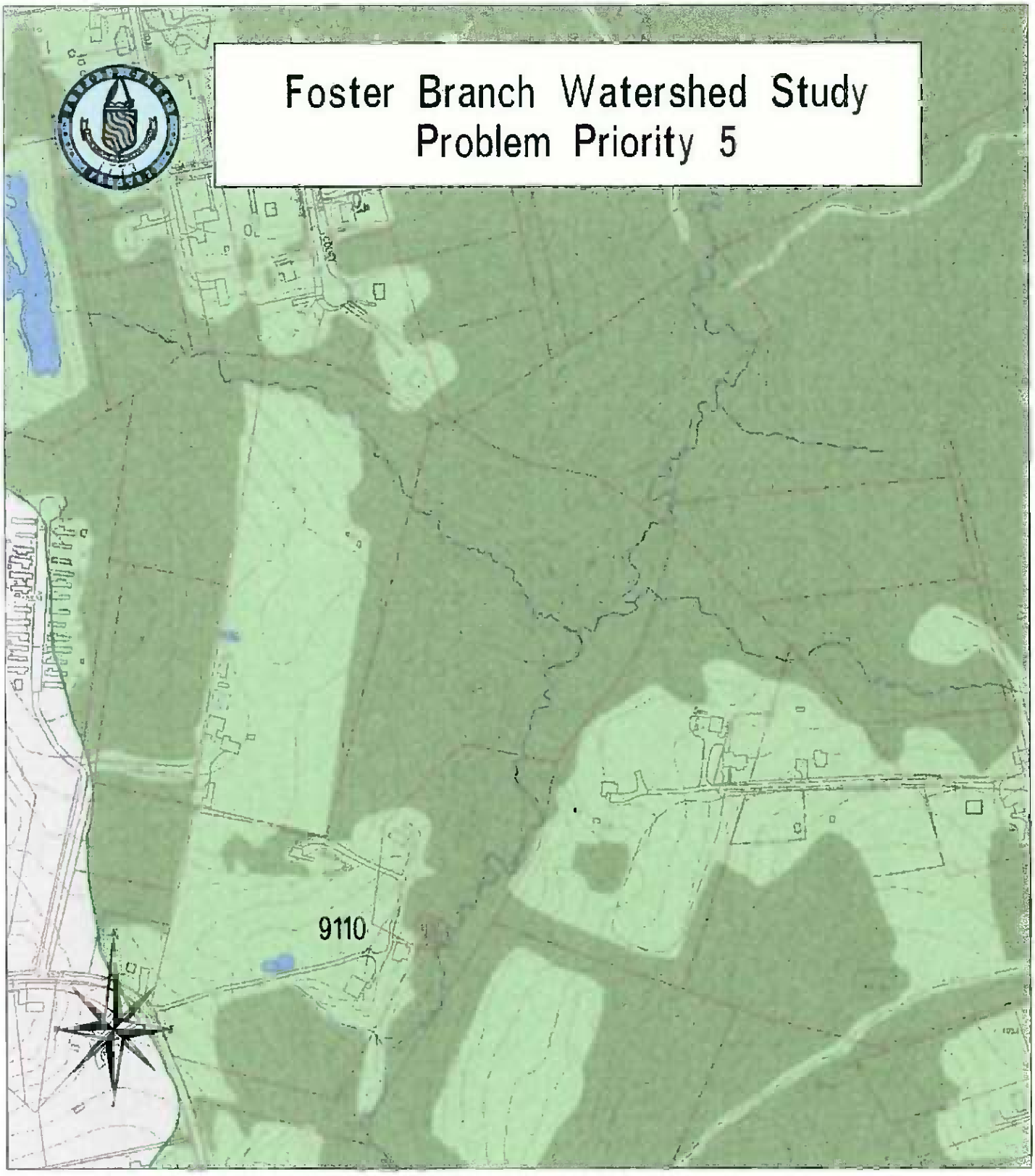
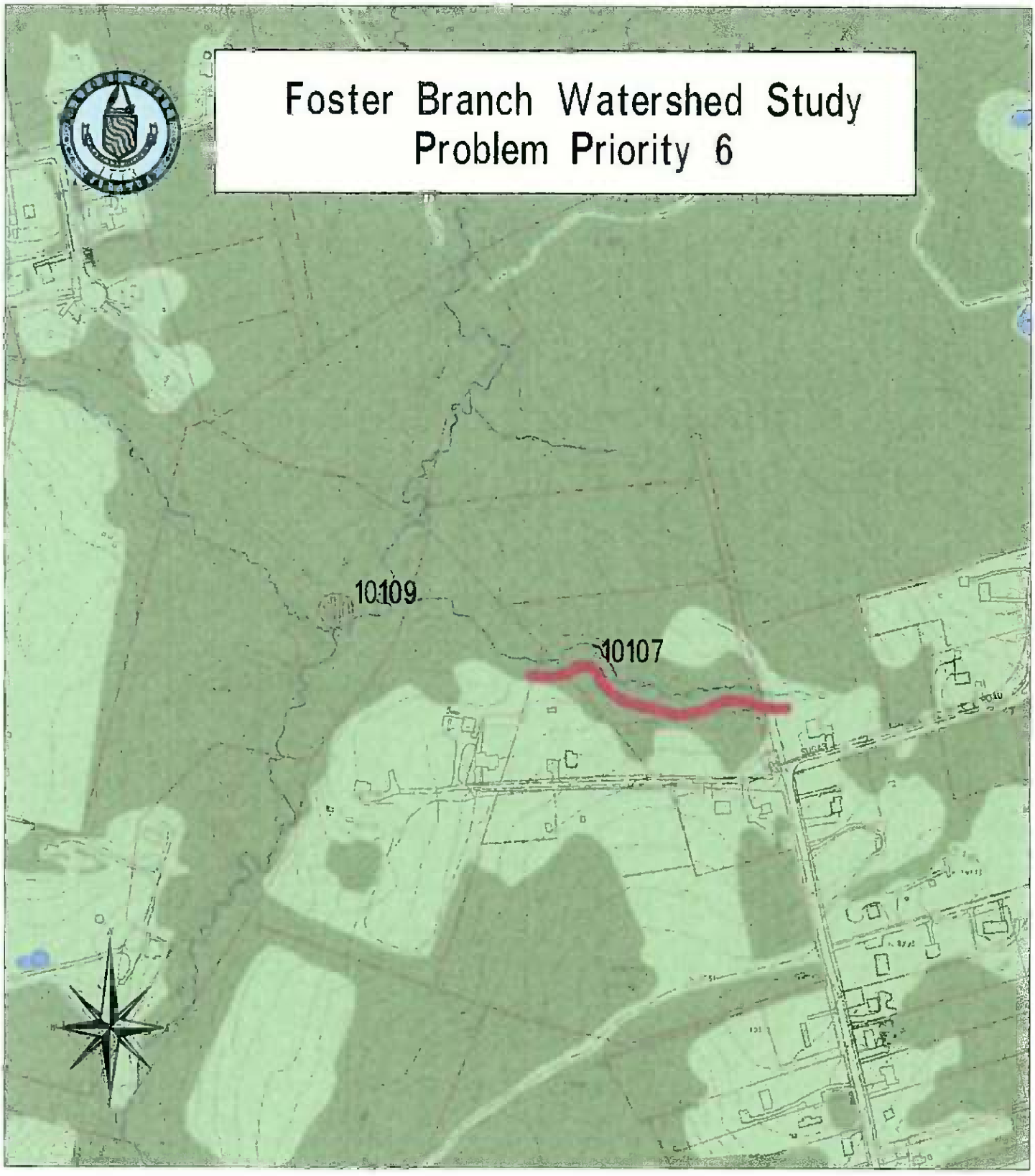

Foster Branch Watershed Study
Problem Priority 5
9110
LEGEND
Problem Reach
Problem Site
Forested Areas
Scattered Woods
Drainage Boundary
Outfalls 36" and larger
Outfalls less than 36"
Inflow
SWM Facility
Stormdrain
Manhole
Inlet
Scale: 1" = 400 FT
Contour Interval 5 Feet
Data collected and complied by Water Resources Engineering April 1997.

Figure 7



LEGEND

- Problem Reach
- Problem Site
- Forested Areas
- Scattered Woods
- Drainage Boundary
- Outfalls 36" and larger
- Outfalls less than 36"
- Inflow
- SWM Facility
- Stormdrain
- Manhole
- Inlet

Scale: 1" = 400 FT
Contour Interval 5 Feet

Data collected and complied by Water Resources Engineering April 1997.

Table 1. Foster Branch Erosion Control Alternatives

Site	Rank	Problem	Correction Measure	Cost	Property Owner
8202, 8201, 11201	1	Channel downcutting	1. Increase storage of Woodbridge pond to control 1 year storm 2. Stream restoration	1. $75K-$100K 2. $103K-$225K	1. Woodbridge HOA 2. R. Comp, H. Ryan, A. Phillips, S. Semenuk
4105	2	Channel downcutting	1. New SWM facility upstream of Rt 40 2. Stream restoration to Class B channel	1. $75K-85K 2. $168K-$360K	1. CSP Assoc., L. Day 2. C. Fruhling, Oak Grove Baptist
12112	3	Channel downcutting	1. Retrofit SWM facility at Joppa Woods to control 1 year storm 2. Stream restoration to Class B channel	1. $35K-$50K 2. $101K-$216K	1. Suburban Homes, Inc. 2. R. Martin, E. Starkey, H. Duckworth
14201	4	Natural bank erosion	1. Lay back banks and plant 2. Recreate low flow channel east of Dembytown Rd	1. $30K 2. $34K-$72K	1. Church @ Joppa, Inc. 2. A. Downing, J. Gilbert
9110	5	Drainage channel headcut	1. Redirect and spread roof runoff from barn. 2. Stabilize channel with rock vortex weirs	$1K	J. Williams.
10107, 10109	6	Trash and woody debris in stream redirecting flow	1. Remove debris	$5K	R. Williams, R. Hoffman, D. Matesic

Discussion

An evaluation of the watershed, as a whole, indicated that severe erosion problems exist in isolated locations. The benefit to addressing these severe problems would be most apparent to the individual property owners, although the quantity of material moved as bedload through the watershed would be reduced. It should be stressed that these severe erosion sites are causing property damage and should be addressed regardless of the benefit to the tidal portion of Foster Branch.

In many instances, the survey teams noted areas of naturally-occurring erosion. This erosion is caused by the nature of the soils in the watershed. Many times, the stream channel appeared to be flowing through a stable area when suddenly, the channel bottom drops several feet. This occurs when the water breaks through a thin clay lens and encounters erodible sandy soil. In other instances, steep slopes have slumped as a result of groundwater movement. The channel bottom is soft sand throughout the watershed, with a few isolated reaches of cobble. Bedload, the movement of material on the channel bottom, is a normal stream function. Sand is more easily transported as bedload than cobble or larger sized material. Channel movement, downcutting and widening appear to be a natural function of this watershed, as they are in other coastal plain watersheds.

Several Foster Knoll residents have expressed concern over the bank erosion occurring in the stretch of Foster Branch between Trimble Road and Joppa Farm Road. This stretch is widening at the meander bends and has lost its natural floodplain. Stream restoration is possible in this area, although not recommended. To establish a more stable configuration, the stream channel would need to be regraded to its stable meander configuration and its floodplain reestablished. This would require significant disturbance of the channel and loss of trees. It should be noted that even in a stable stream system, bedload of sandy material will still occur.

Other Foster Knoll residents have noted that at low tide, deposits of slag can be seen at the stormdrain outfalls. The County may wish to consider alternatives to the use of slag for deicing purposes in areas adjacent to tidal waters.

Recommendations

Based on the survey results and observations from residents, the following activities are recommended:

1. Design and construct projects identified as priorities 1-3.
2. Complete repairs to Stillmeadow and Haverhill tributaries.
3. Consider deicing alternatives.

Total cost to implement recommendations 1-3: $591K - $1108K

1. $557,000 - $1,036,000
2. $34,000 - $72,000
3. To be determined

Harford County Division of Engineering does not have any of the new projects budgeted. The County should consider applying for State grants to help defray the costs. The stormwater management facility at Route 40 would be eligible for a State Stormwater Pollution Control grant at a 75% State / 25% County split. The stream restoration projects would be eligible for a State Small Creek and Estuary Restoration Program grant at a 50/50 split.

The implementation of the recommended activities will reduce sediment transport to the tidal portion of Foster Branch, but not eliminate it. There will continue to be a need for periodic dredging to maintain boat access.

Appendix I

Data Sheets

IB

Map: ___ ___ ___ Team: ___ Site: ___ ___

Date: __ __ / __ __ / __ __ (M M D D Y Y) Photo: _____

Inadequate Buffer

Buffer inadequate on: Left Right Both (looking down stream)

Buffer width left side: _____ ft **Buffer width right side:** _____ ft

Length left side: _____ ft **Length right side:** _____ ft

Present land use right side: Crop field, Pasture, Lawn, Paved, Shrubs & Small Trees, Forest, Multiflora Rose, Other _____

Present land use left side: Crop field, Pasture, Lawn, Paved, Shrubs & Small Trees, Forest, Multiflora Rose, Other _____

Land ownership: Public Private Unknown
If public, name: _____

Severity	Minor	1	2	3	4	5	Severe	Unknown (-1)
Correctability	Best	1	2	3	4	5	Worst	Unknown (-1)
Access	Best	1	2	3	4	5	Worst	Unknown (-1)

CH

Map: ___ ___ ___ Team: ___ Site: ___ ___

Date: __ __ / __ __ / __ __ (M M D D Y Y) Photo: _____

Channelization

Type: Concrete, Gabion, Rip-rap, Earth Channel, Other: _____

Bottom Width: _____ in **Length:** _____ ft

Is sediment deposition occuring in the channel ? Yes No

Is vegetation growing in the channel? Yes No

Is is part of a road crossing? No Above Below Both

Channelized length above road crossing _____ ft
Channelized length below road crossing _____ ft

Severity	Minor	1	2	3	4	5	Severe	Unknown (-1)
Correctability	Best	1	2	3	4	5	Worst	Unknown (-1)
Access	Best	1	2	3	4	5	Worst	Unknown (-1)

IC

Map: ___ ___ ___ Team: ___ Site: ___ ___

Date: __ __ / __ __ / __ __ (M M D D Y Y) Photo: _____

In or Near Stream Construction

Type of activity: Road, Road Crossing, Utility, Logging, Bank Stabilization, Residential Development, Industrial Development, Other: _____

Sediment Control: Adequate Inadequate Unknown

If inadequate, why? _____

Is stream bottom below site laden with excess sediment? Yes No

Length of stream affected: _____ ft

Company doing construction: _____

Severity Minor 1 2 3 4 5 Severe Unknown (-1)

ES

Map: ___ ___ ___ Team: ___ Site: ___ ___

Date: __ __ / __ __ / __ __ (M M D D Y Y) Photo: _____

Erosion Site

Type: Downcutting, Widening, Headcutting

Cause: Bend at steep slope, Pipe Outfall, Below Channelization, Below Road Crossing, Livestock, Natural, Other: _____

Length: _____ ft **Average bank height:** _____ ft

Present Land Use Right Side (looking downstream): Crop field, Pasture, Lawn, Paved, Shrubs & Small Trees, Forest, Multiflora Rose, Other _____

Present Land Use Left Side (looking downstream): Crop field, Pasture, Lawn, Paved, Shrubs & Small Trees, Forest, Multiflora Rose, Other _____

Severity	Minor	1	2	3	4	5	Severe	Unknown (-1)
Correctability	Best	1	2	3	4	5	Worst	Unknown (-1)
Access	Best	1	2	3	4	5	Worst	Unknown (-1)

FB

Map: ___ ___ ___ **Team:** ___ **Site:** ___ ___

Date: ___ ___ / ___ ___ / ___ ___ (M M D D Y Y) **Photo:** _____

Fish Barrier

Fish Blockage: Total, Partial, Temporary, Unknown

Type of Barrier: Dam, Road Crossing, Pipe Crossing, Natural Falls, Beaver Dam, Channelized, Other

Blockage because: Too high, Too shallow, Too fast

Water drop: _____ inches (if too high)

Water depth: _____ inches (if too shallow)

Severity	Minor	1	2	3	4	5	Severe	Unknown (-1)
Correctability	Best	1	2	3	4	5	Worst	Unknown (-1)
Access	Best	1	2	3	4	5	Worst	Unknown (-1)

TD

Map: ___ ___ ___ **Team:** ___ **Site:** ___ ___

Date: ___ ___ / ___ ___ / ___ ___ (M M D D Y Y) **Photo:** _____

Trash Dumping

Type of trash: Residential, Industrial, Yard Waste, Floatables, Tires, Construction, Other: _____

Amount of trash: _____ pick-up truck loads

Other measure _____

Is trash confined to? Single site, Large Area

Possible cleanup site for volunteers? Yes No

Land Ownership: Public Private Unknown

If public, name: _____ _____

Severity	Minor	1	2	3	4	5	Severe	Unknown (-1)
Correctability	Best	1	2	3	4	5	Worst	Unknown (-1)
Access	Best	1	2	3	4	5	Worst	Unknown (-1)

UC

Map: ___ ___ ___ Team: ___ Site: ___ ___

Date: __ __ / __ __ / __ __ (M M D D Y Y) Photo: _____

Unusual Condition

Type: Odor, Scum, Excessive Algae, Water Color/Clarity, Red Flock, Sewage Discharge, Oil, Exposed Pipe, Leaking Pipe, Other: _____

Describe: _____

_____

_____

Potential Cause: _____

_____

Severity	Minor	1	2	3	4	5	Severe	Unknown (-1)
Correctability	Best	1	2	3	4	5	Worst	Unknown (-1)
Access	Best	1	2	3	4	5	Worst	Unknown (-1)

WC

Map: ___ ___ ___ Team: ___ Site: ___ ___

Date: __ __ / __ __ / __ __ (M M D D Y Y) Photo: _____

Wetland or Water Quality Creation Site

Describe Location: _____

_____

_____

Present Land Use: Crop field, Pasture, Lawn, Paved, Shrubs & Small Trees, Forest, Multiflora Rose, Other _____

Are there wetlands present ? Yes No Unknown

Height of potential site above water in adjacent stream or wetland?

< 4 feet (L) > 4 feet (G) Unknown

Slope of potential site?

Flat Low Slope Medium Slope High Slope

Potential	Best	1	2	3	4	5	Worst	Unknown (-1)
Access	Best	1	2	3	4	5	Worst	Unknown (-1)

Appendix II

Survey Data

Inadequate Buffers

ID	Date	Inadequate	Width-l	Width-r	Length-l	Length-r	Land use-r	Land use-l	Owner	Severity	Correctability	Access
3203	4/28/97	L	0	100	40	-1	FO	PA	PR	1	1	1
6203	4/28/97	R	150	10	-1	150	PA	FO	PR	1	1	1
8201	4/29/97	R	-1	3	-1	100	LA	SH	PR	2	2	2
8202	4/29/97	L	0	-1	125	-1	SH	LA	PR	2	2	2
13201	4/29/97	B	0	0	300	300	LA	LA	PR	2	2	1
16201	4/29/97	B	0	0	200	200	PA	O	PU	1	1	1

Channelization

ID	DATE	TYPE	WIDTH	LENGTH	CROSSING	LENGTH-A	LENGTH-B	SEVERITY	CORRECTABILITY	ACCESS
1103	4/28/97	EC	36	1100	N	0	0	3	4	4

In or Near Stream Construction

ID	Date	Type	Sediment	Affected	Length	Severity
7203	4/28/97	O	I	N	-1	4
12113	4/29/97	RC	I	N	200	-1
15101	4/30/97	RO	A	Y	200	1

Erosion Sites

ID	Date	Type	Cause	Length	Height	LURight	LULeft	Severity	Correctability	Access
1102	4/28/97	D	O	100	10	FO	FO	2	3	4
3104	4/28/97	D	RC	100	5	FO	PV	1	3	3
3202	4/28/97	D	NA	150	2	FO	FO	1	3	3
4105	4/28/97	D	RC	700	20	SH	SH	5	5	2
4106	4/28/97	D	NA	1000	4	FO	FO	1	5	5
4201	4/28/97	D	NA	300	3.5	FO	FO	2	5	5
4202	4/28/97	D	NA	30	6	FO	FO	4	4	5
6202	4/28/97	D	NA	2000	4	FO	FO	2	4	5
7204	4/28/97	D	NA	30	1.5	FO	FO	1	5	5
7205	4/28/97	D	BE	50	2	FO	FO	2	5	5
7206	4/28/97	W	BE	30	4	FO	FO	2	5	5
8201	4/29/97	H	RC	100	4.5	LA	SH	3	4	2
8202	4/29/97	W	PO	125	6	SH	LA	5	3	2
9110	4/29/97	H	O	25	5	FO	FO	3	2	2
9201	4/28/97	D	NA	250	2	FO	FO	1	3	4
10107	4/29/97	D	NA	500	6	FO	FO	3	4	2
10109	4/29/97	W	O	75	4	FO	FO	3	5	5
10202	4/29/97	W	NA	800	2	FO	FO	1	3	5
11201	4/29/97	W	NA	400	3.5	SH	SH	3	4	2
12112	4/29/97	D	PO	300	5	FO	FO	4	3	2
12114	4/29/97	W	NA	2600	2	FO	FO	1	5	5
13101	4/29/97	W	NA	800	2	FO	FO	1	5	2
13203	4/29/97	W	NA	1500	2	FO	FO	1	4	2
14201	4/29/97	D	NA	500	8	FO	FO	4	5	5
15201	4/30/97	D	PO	300	1.5	FO	FO	1	1	3
16203	4/30/97	H	PO	50	3	SH	SH	3	2	2
16204	4/30/97	W	RC	1000	1.5	FO	SH	2	4	3

ID	Date	Type	Cause	Length	Height	LURight	LULeft	Severity	Correctability	Access
16205	4/30/97	H	PO	100	3	SH	SH	1	2	2
18101	4/30/97	W	O	300	0	LA	FO	2	1	2
18102	4/30/97	W	BE	15	3	FO	FO	3	2	2
18103	4/30/97	D	BE	800	6	FO	FO	4	4	1

Fish Barrier

ID	Date	Blockage	Barrier	Reason	Drop	Depth	Severity	Correctability	Access
4202	4/28/97	UN	NF	HI	36	-1	5	4	5
7201	4/28/97	TE	NF	HI	18	-1	3	1	5
7202	4/28/97	TE	NF	HI	8	-1	3	1	5
13202	4/29/97	TO	RC	HI	18	-1	4	4	1
16202	4/30/97	TO	RC	HI	12	-1	2	4	1

Trash Dumping

ID	Date	Blockage	Barrier	Reason	Drop	Depth	Severity	Correctability	Access
4202	4/28/97	UN	NF	HI	36	-1	5	4	5
7201	4/28/97	TE	NF	HI	18	-1	3	1	5
7202	4/28/97	TE	NF	HI	8	-1	3	1	5
13202	4/29/97	TO	RC	HI	18	-1	4	4	1
16202	4/30/97	TO	RC	HI	12	-1	2	4	1

Unusual Condition

ID	Date	Type	Desc	Cause	Severity	Correctability	Access
3201	4/28/97	RF	Discharge from adj. prop w/ pool		1	-1	2
6201	4/28/97	O	Overflow weir in front section missing		1	1	1
7205	4/28/97	SC	Foam at bends near debris dam - many trees down		1	-1	-1
9111	4/29/97	OD	Faint sewage odor		-1	-1	-1
10201	4/28/97	WC	Plume of sediment from trib into mainstem		2	4	1

Wetland or Water Quality Creation Site

ID	Date	Description	Land Use	Wetlands	Height	Slope	Potential	Access
6203	4/28/97	Adj. to stream, unshaded section, wet	PA	U	L	LS	2	3